CLAIM AMENDMENTS

Please amend claims 1, 3, 4, 14, 15, 17 and 18 and add new claim 21 as follows:

1. (Currently Amended) A temperature compensation method for a physical property sensor, said method comprising the steps of:

locating a bridge circuit on a physical property sensor substrate wherein said bridge circuit comprises a plurality of components, including at least one heating element and a plurality of resistors, including ~~at least one~~ a plurality of compensating resistors~~-~~, wherein said plurality of compensating resistors includes a temperature independent resistor for compensating a temperature coefficient of resistance of said at least one heating element ~~and a temperature coefficient of resistance of said plurality of components and a temperature dependence of a physical property thereof~~;

simultaneously driving an imbalance of said bridge circuit to a zero value and a supply voltage thereof to a level required to stabilize said heating element at a required temperature rise above an ambient temperature, wherein said heating element comprises a thin-film heating material, ~~; and~~

adjusting the resistance value of said temperature independent resistor to compensate said temperature coefficient of resistance of said heating element(s); and

dynamically compensating for a temperature coefficient of resistance of said

thin-film heating material and ~~said~~ a temperature dependence of said plurality of ~~components~~ resistors and said heating element(s) of said bridge circuit components and ~~said~~ a temperature dependence of a physical property thereof, utilizing said ~~at least one~~ plurality of compensating resistors of said bridge circuit.

2. (Original) The method of claim 1 further comprising the step of configuring said bridge circuit to comprise a Wheatstone Bridge circuit.

3. (Currently Amended) The method of claim1 further comprising the step of modifying said bridge circuit such that said plurality of compensating resistors includes~~to comprise at least~~ one other temperature independent ~~compensating~~ resistor, and

adjusting the value of said other temperature independent compensating resistor such that, for said adjusted resistance value of said temperature independent resistor, said heating element is maintained at said required temperature rise above said ambient temperature.

4. (Currently Amended) The method of claim 1 further comprising the step of increasing a resistance value of said ~~at least one~~ temperature independent ~~compensating~~ resistor to compensate for a temperature dependence of a physical property value.

5. (Original) The method of claim 4, wherein said physical property value comprises a value of at least one of the following: thermal conductivity, specific heat, compressibility, octane number, heating value, speed of sound, and viscosity.

6. (Original) The method of claim 1 further comprising the steps of:

measuring a heater power of said heating element at an approximately constant temperature rise above said ambient temperature, wherein said approximately constant temperature rise varies with said ambient temperature to compensate for a combined effect of said thin-film heating material, said components of said bridge circuit, and a fluid property to be measured by said physical property sensor.

7. (Currently Amended) The method of claim 1 further comprising the step of minimizing a change in a bridge voltage of said bridge circuit as said ambient temperature is varied over a required range by an optimal choice of a value of said temperature independent ~~compensating~~ resistor.

8. (Original) The method of claim 7 further comprising the step of selecting said bridge voltage as a supply voltage generated by an amplification of a bridge circuit imbalance, such that said bridge voltage serves as a sensor output signal of said physical property sensor.

9. (Cancelled)

10. (Original) The method of claim 1 wherein said bridge circuit comprises a front-end analog circuit of said physical property sensor.

11. (Original) The method of claim 1 wherein said physical property sensor comprises a gas property sensor.

12. (Original) The method of claim 1 wherein said physical property sensor comprises a liquid property sensor.

13. (Original) The method of claim 1 wherein said physical property sensor comprises a solid property sensor.

14. (Currently Amended) A temperature compensation method for a physical property sensor, said method comprising the steps of:

locating a bridge circuit on a physical property sensor substrate wherein said bridge circuit comprises a plurality of components, including at least one heating element and a plurality of resistors, including ~~at least one~~ a plurality of compensating resistors, wherein said plurality of compensating resistors includes first and second temperature independent resistors;

simultaneously driving an imbalance of said bridge circuit to a zero value and a supply voltage thereof to a level required to stabilize said heating element at a required temperature rise above an ambient temperature, wherein said heating element comprises a thin-film heating material;

dynamically compensating for a temperature coefficient of resistance of said thin-film heating material and a temperature dependence of said plurality of ~~components~~ of resistors and said heating element(s) of said bridge circuit components and a temperature dependence of a physical property thereof, utilizing said ~~at least one~~ compensating resistors of said bridge circuit, wherein said physical property includes at least one of the following: thermal conductivity, specific heat, compressibility, octane number, heating value, speed of sound, and viscosity;

increasing a resistance value of said ~~at least one~~ first temperature independent ~~compensating~~ resistor to compensate for a temperature dependence of

a physical property value, wherein said physical property value comprises a value of at least one of the following: thermal conductivity, specific heat, compressibility, octane number, heating value, speed of sound, and viscosity;

adjusting the resistance value of said second temperature independent resistor such that, for said increased resistance value of said first temperature independent resistor, said heating element is maintained at said required temperature rise above said ambient temperature;

minimizing a change in a bridge voltage of said bridge circuit as said ambient temperature is varied over a required range by an optimal choice of a value of said first temperature independent ~~compensating~~ resistor; and

selecting said bridge voltage as a supply voltage generated by an amplification of a bridge circuit imbalance, such that said bridge voltage serves as a sensor output signal of said physical property sensor.

15. (Currently Amended) A temperature compensation system for a physical property sensor, comprising:

a bridge circuit comprising a plurality of components, including at least one heating element comprising a thin-film heating material and a plurality of resistors, including ~~at least one~~ a plurality of compensating resistors~~-~~, wherein said plurality of compensating resistors includes a temperature independent resistor, the resistance value of said temperature independent resistor being adjusted to compensate for a temperature coefficient of resistance of said at least one heating element;

a physical property sensor substrate wherein said bridge circuit is located on

said physical property sensor substrate and wherein an imbalance of said bridge circuit is driven to a zero value while a supply voltage thereof is simultaneously driven to a level required to stabilize said heating element at a required temperature rise above an ambient temperature; and

a compensator for dynamically compensating for at a temperature coefficient of resistance of said thin-film heating material and a temperature dependence of said plurality of ~~components~~ said resistors and said heating element(s) of said bridge circuit components and a temperature dependence of a physical property thereof, wherein said compensator comprises said ~~at least one~~ plurality of compensating resistors of said bridge circuit.

16. (Original) The system of claim 15 wherein said bridge circuit comprises a front-end analog circuit of said physical property sensor and wherein said bridge circuit further comprises a Wheatstone Bridge circuit.

17. (Currently Amended) The system of claim 15 wherein said plurality of compensating resistors include ~~bridge circuit to comprise~~ at least one other temperature independent ~~compensating~~ resistor, the resistance value of said other temperature independent resistor being adjusted such that, for said adjusted resistance value of said temperature independent resistor, said heating element is maintained at said required temperature rise above said ambient temperature.

18. (Currently Amended) The system of claim 15 wherein a resistance value of said ~~at least one~~ temperature independent ~~compensating~~ resistor is increased to compensate for a temperature dependence of a physical property value.

19. (Original) The system of claim 18, wherein said physical property value comprises a value of at least one of the following: thermal conductivity, specific heat, compressibility, octane number, heating value, speed of sound, and viscosity.

20. (Original) The system of claim 15 wherein a heater power of said heating element is measurable at an approximately constant temperature rise above said ambient temperature, wherein said approximately constant temperature rise varies with said ambient temperature to compensate for a combined effect of said thin-film heating material, said components of said bridge circuit, and a fluid property to be measured by said physical property sensor.

21. (New) The system of claim 17 wherein said temperature independent resistor is arranged in series with a temperature dependent compensating resistor and wherein said other temperature independent resistor is arranged in parallel with said temperature dependent compensating resistor.